

Remarks/Arguments

Applicant has received and carefully reviewed the Office Action mailed on May 8, 2006, setting a three month shortened statutory period for reply ending on August 8, 2006. Claims 1-14 and 16-23 are pending. Claim 15 has been cancelled without prejudice, and claims 21-23 have been added. No new matter has been added. Reconsideration and reexamination are respectfully requested.

Applicant has made several amendments to the specification to remove references to Applicants' attorney's docket numbers and insert appropriate application numbers, published application numbers, and patent numbers associated with co-pending applications that have been incorporated by reference. Also, Applicant has amended the specification to correct a typographical error.

On page 2 of the Office Action, claims 1-3, 7, 8 and 11-20 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,718,858 to Bartels. The Examiner cites to item 86 in Figure 4, which appears to show a determination of whether a stabilization period is complete. The Examiner also cites the following passage from Bartels:

The on-off function that is implemented in the present control or microcomputer within the flame safeguard sequencer by the automatic firing rate control mode means 55 can also provide a low fire hold operation at the outset of the operation of the device. This can be used as a fixed time period immediately following the start up for stabilization to allow the water temperature in the boiler to reach some minimum temperature, and the differential temperatures between the output and the input to reach a minimum temperature. All of these functions are provided to avoid thermal shock to a boiler just being put into operation. The thermal shock control typically has been an incidental in boiler control, and has not been readily accommodated because of the severe limitations of the older style electromechanical flame safeguard sequencers. The present automatic firing rate control mode means 55 allows the implementation of the desired control functions, and also provides for direct manual control of the firing rate through a keyboard entry (not disclosed) when in a manual mode of control. A manual mode of control has been available on previously mentioned earlier equipment.

(emphasis added) (Bartels, at column 6, lines 42-64). The cited passage appears to disclose maintaining a low fire rate for a "fixed time period" immediately following start up.

In contrast, claim 1 recites, as amended and in relevant part, “maintaining the first firing rate for a period of time unless a predefined condition occurs during the period of time.”

Illustrative predefined conditions are recited in dependent claims 2-4 and may include, for example, when the temperature of a circulating fluid in the boiler system drops below a predetermined level, when a rate of change for a sensed temperature for a circulating fluid in the boiler system rises above a predetermined level, and when there is a likelihood of condensation in the primary heat exchanger (if one is in the system). It does not appear that Bartels discloses maintaining the first firing rate for a period of time unless a predefined condition occurs during the period of time, as recited in claim 1. Instead, the cited portion of Bartels appears to disclose merely maintaining a low firing rate until a “fixed time period” expires. As such, and for these and other reasons, claim 1 is believed to be clearly patentable over Bartels.

Applicant notes that dependent claim 2 recites the method of claim 1 wherein the predefined condition includes when the temperature of a circulating fluid in the boiler system drops below a predetermined level. Bartels does not appear to disclose, teach or suggest such a predefined condition.

Dependent claim 3 recites the method of claim 1 wherein the predefined condition includes when a rate of change for a sensed temperature for a circulating fluid in the boiler system rises above a predetermined level. Like above, Bartels does not appear to disclose, teach or suggest such a predefined condition.

Applicant notes that the particulars of dependent claims 2-3 and 7 were not addressed in the Office Action, nor were the individual steps recited in claim 1. In order to avoid piecemeal

prosecution, Applicant respectfully requests that the Examiner provide a detailed explanation of the rejections in any subsequent action. For the foregoing reasons, as well as other reasons, dependent claims 2-3 and 7 are believed to be clearly patentable over Bartels.

Independent claim 8, as amended, recites a controller for a boiler system that is configured to perform several steps, including maintaining a first firing rate for a period of time unless a predefined condition occurs during the period of time. As discussed above, Bartels does not appear to teach or suggest such a method. Thus, for similar reasons to those given above, as well as other reasons, claim 8 is believed to be clearly patentable over Bartels.

Claim 11 is directed toward a method of controlling stages in a multi-stage boiler system. Claim 11 recites maintaining a first firing rate for a period of time unless a predefined condition occurs during the period of time, a step which, as discussed above, does not appear to be disclosed or suggested by Bartels. Furthermore, claim 11 recites determining whether the stage is the first stage to become active. Bartels does not appear to teach a multi-stage boiler system and, furthermore, Bartels does not appear to teach a step of determining whether the boiler is the first stage to become active. For these and other reasons, claim 11 is believed to be clearly patentable over Bartels.

Claim 12 is directed at a controller for controlling a stage in a multi-stage boiler system. Claim 12 recites that the controller is configured to perform a steps of determining whether the stage is the first stage to become active, as well as maintaining a first firing rate for a period of time unless a predefined condition occurs during the period of time. Again, Bartels does not

appear to disclose a controller configured to perform these as well as other steps. For these and other reasons, claim 12 is believed to be clearly patentable over Bartels.

Claim 13 recites a method of controlling a boiler system, with the method comprising controlling a stage with a stable firing rate for a period of time unless at least one of a number of conditions are satisfied during the period of time wherein the conditions include at least whether the stage is no longer needed. Again, Bartels does not appear to disclose such a method, in particular, Bartels does not appear to disclose a condition allowing termination of the low fire hold state if the stage is no longer needed. For these and other reasons, claim 13 is believed to be clearly patentable over Bartels.

Claim 14 depends from claim 13 and further recites that the conditions also include whether it is determined that the stage cannot operate without potential damage at the stable firing rate. Bartels does not appear to disclose or suggest such a condition. For these additional reasons, claim 14 is believed to be clearly patentable over Bartels.

Claim 15 has been canceled without prejudice.

Claim 16 recites a controller for controlling a multi-stage boiler system, wherein the controller is configured to perform at least a step of controlling a stage with a stable firing rate independent of heat load for a period of time unless at least one of a number of conditions are satisfied during the period of time, wherein the conditions include whether the stage is no longer needed. Again, Bartels does not appear to disclose ending the low fire hold state in response to a determination that the stage is no longer needed, and therefore the rejection of claim 16 should be withdrawn.

Claim 17 recites a system controller for a multi-stage boiler system, wherein the controller has at least first and second configurations. The first configuration is one in which the controller is enabled to perform at least a step of indicating to a particular stage of the system whether it is the first stage to become active in the system. The second configuration includes a step of determining whether a stage that is activated is the first stage to become active and, if so, providing a heat demand signal to the stage at a level selected to keep the first stage at a relatively low output level for a period of time unless one of a number of conditions is met during the period of time. Each configuration recites steps requiring consideration of a multi-stage boiler system. Bartels does not appear to disclose a multi-stage boiler system, rendering rejection of claim 17 under 35 U.S.C. §102(b) inappropriate, for at least this reason, as well as other reasons. Furthermore, and for the reasons set forth above with respect to claim 1, as well as other reasons, claim 17 is believed to be clearly patentable over Bartels. For similar and other reasons, dependent claim 18 is believed to be clearly patentable over Bartels.

Claim 19 is directed toward a stage controller for controlling a stage of a boiler system, wherein the stage controller communicates with a boiler system controller. Claim 19 recites that the stage controller is configured to perform, in response to the system controller indicating that the stage is the first stage to become active, the step of activating the stage at a first firing rate and maintaining the first firing rate for a period of time unless a predefined condition occurs during the period of time. As discussed above, Bartels does not appear to disclose use of the recited predefined condition. For these and other reasons, claim 19 and dependent claim 20 are believed to be clearly patentable over Bartels.

On page 2 of the Office Action, claims 4, 5, 9 and 10 were rejected under 35 U.S.C.

§103(a) as being unpatentable over Bartels in view of U.S. Patent No. 6,536,678 to Pouchak. It is unclear how the Examiner is applying the combination, as the recited elements of claim 4 are not addressed. In particular, claim 4 recites:

4. The method of claim 1 wherein:
the boiler system includes a boiler for heating a circulating fluid, the boiler having a primary heat exchanger and a bypass temperature sensor for sensing a bypass temperature of the circulating fluid entering the primary heat exchanger;
and
the predefined condition includes a likelihood of condensation within the primary heat exchanger.

The concept of a predefined condition, as explained above, is not believed to be disclosed in Bartels. The Examiner states that the bypass valve taught in Pouchak could be positioned in the system of Bartels to avoid condensation, however, that does not address the recited claim language. As noted above, claim 1 recites “maintaining the first firing rate for a period of time unless a predefined condition occurs during the period of time.” As detailed above, Bartels does not appear disclose maintaining a first firing rate for a period of time unless a predefined condition occurs during the period of time, as recited in claim 1. Likewise, Pouchak does not appear disclose such a step. In addition, claim 4 recites that the predefined condition includes a likelihood of condensation within the primary heat exchanger of a boiler system. Neither Bartels nor Pouchak appear to disclose such a method. Indeed, the Examiner does not further explain how the predefined condition recited in claims 1 and 4 is taught by the combination of references. For these and other reasons, the combination of Bartels and Pouchak do not appear to teach each and every element of claim 4, and thus the combination of references cannot render

claim 4 obvious. For these and other reasons, claim 4 is believed to be clearly patentable over Bartels in view of Pouchak.

As the burden of establishing a *prima facie* case of obviousness lies with the Examiner, Applicant is unable to determine how the secondary reference is to be applied. Moreover, Applicant believes that, in light of the above remarks with reference to claim 1 and 4, and for other reasons, the rejection of claim 4, as well as dependent claim 5, should be withdrawn.

The rejections of claims 9-10 also fail to address the predefined condition recited in base claim 8, and for these and other reasons, Applicant believes that a *prima facie* case of obviousness has not been established. Withdrawal of the rejection of claim 9-10 is requested.

On pages 2-3 of the Office Action, claim 6 was rejected under 35 U.S.C. §103(a) as being unpatentable over Bartels in view of Pouchak. The Examiner states that inclusion of an inlet temperature sensor would be obvious as “mere duplication of parts has no patentable significance unless a new and unexpected result is produced”. The relevance of this statement to the rejection is unclear, as the claim recites a part (an inlet temperature sensor) that is not a “duplicate” of any other part of the system, the inlet temperature sensor being defined by both its function (temperature) and location (the inlet to the secondary heat exchanger). Furthermore, the rejection fails to address the shortcomings of the rejections of claim 1 and 4 as discussed above. At least for the reasons stated with respect to claim 1, as well as claim 4, claim 6 is believed to be clearly patentable over the cited combination.

On page 3 of the Office Action, the Examiner states that a recitation that an element is “adapted to” perform a function is not a positive limitation. Applicant traverses the broad

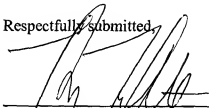
applicability of this statement, as it appears that the cited case, *In re Hutchinson*, 69 USPQ 138 (CCPA 1946), applies primarily to statements of intended use. However, the discussion above illustrates that the claims are patentable over the cited references, such that further discussion of the *In re Hutchinson* case is unnecessary at this time.

Applicant has added new claims 21-23. Independent claim 21 recites a method of operating a boiler system, the boiler system adapted to provide heat to maintain a first setpoint for a fluid heated by the boiler system, the method comprising receiving a signal indicating that a stage of the boiler system should be activated, activating the stage at a first firing rate, and maintaining the first firing rate unless one or more predefined conditions occur. Claim 22 depends from claim 21 and recites a method as in claim 21 wherein one of the predefined conditions relates to sensed temperature(s) of the fluid. Claim 23 depends from claim 22 and further recites that one of the predefined condition relates to the expiration of a predetermined period of time. It is believed that these newly presented claims are also in condition for allowance.

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Reconsideration and reexamination are respectfully requested. Entry of the amendments to the specification is also requested. It is believed that each of claims 1-14 and 16-23 is in condition for allowance, and issuance of a Notice of Allowance in due course is respectfully requested. If a telephone conference would be of assistance, please contact the undersigned attorney at 612-359-9348.

Respectfully submitted,



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